

Amendments to the Claims

This listing of claims replaces all prior listings.

1 (previously presented). A supermolecular structure comprising:

a host material; and

impurities comprising component atoms of at least a first type and a second type such that the positions of the component atoms are substantially fixed, at least in part by controlled placement on a surface, to impart substantially predictable single-charge properties to the structure, the structure also being described by the formula:

$$H_A \Sigma X_{ia}$$

wherein:

H defines the host material;

A is a number representing the number of host atoms in the structure;

X defines the i^{th} impurity; and

a defines the quantity of the i^{th} impurity.

2-5 (cancelled).

6 (previously presented). A single charge oscillator array comprising a plurality of electrostatically coupled supermolecular structures, each structure further comprising:

a host material; and

impurities comprising component atoms of at least a first type and a second type such that the positions of component atoms are substantially fixed, at least in part by controlled placement on a surface, to impart substantially predictable properties to the structure, each structure also being described by the formula:

$$H_A \Sigma X_{ia}$$

wherein:

H defines the host material;

A is a number representing the number of host atoms in the structure;

X defines the i^{th} impurity; and
a defines the quantity of the i^{th} impurity.

7-15 (canceled).

16 (previously presented). A semiconductor oscillator comprising:

an insulating substrate;

a single charge oscillator array disposed upon the insulating substrate, the single charge oscillator array further comprising a plurality of electrostatically coupled host structures comprising single-charge impurity atoms of at least a first type and a second type, each single-charge impurity atom have been positioned at least in part by controlled placement on a surface;

contact electrodes connected to the array; and

a thermal energy supply system for maintaining an operating temperature of the array at least as high as a threshold temperature.

17 (previously presented). The semiconductor oscillator of claim 16 wherein each host structure can be described by the formula:

$$H_A \Sigma X_{ia}$$

wherein:

H defines the host material;

A is a number representing the number of host atoms in the structure;

X defines the i^{th} impurity; and

18 (cancelled).

19 (previously presented). Apparatus for supplying oscillations comprising:

means for supplying thermal energy to maintain an operating temperature of the apparatus at least as high as a threshold temperature;

means for generating coherent oscillations in response to the thermal energy, the means for generating further comprising a plurality of electrostatically coupled host structures comprising single-charge impurity atoms of at least a first type and a second type, each single charge impurity atom have been positioned at least in part by controlled placement on a surface;

means for insulating and supporting the means for generating; and

means for connecting the apparatus to external circuitry, the means for connecting connected to the means for generating.

20-28 (canceled).